

Appln. No. 09/605,342
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Reply to Office Action of February 27, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 (Previously presented). An isolated DNA molecule according to claim 29, wherein said heterologous polypeptide contains a non-native apical surface membrane targeting sequence.

Claims 2-6 (Cancelled)

7 (Original). An isolated DNA molecule according to claim 1, wherein said non-native apical surface membrane targeting sequence is a C-terminal glycosyl phosphatidylinositol (GPI) signal sequence.

8 (Original). An isolated DNA molecule according to claim 1, wherein said apical surface membrane targeting sequence is one or more non-native sites for glycosylation at predicted β -turns of said heterologous polypeptide.

9 (Original). An isolated DNA molecule according to claim 8, wherein said one or more non-native sites for glycosylation are sites for Asn-linked glycosylation.

10 (Original). An isolated DNA molecule according to claim 8, wherein said one or more non-native sites for glycosylation are sites for O-glycosylation.

Claim 11 (Cancelled)

12 (Original). An isolated DNA molecule according to claim 1, wherein said heterologous polypeptide is a fusion polypeptide.

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13 (Currently amended). An isolated DNA molecule according to claim 9 12, wherein said fusion polypeptide is a fusion between a heterologous polypeptide of interest and uromodulin via a chemically or enzymatically cleavable linker, said uromodulin having a GPI signal sequence at its C-terminus.

14 (Original). An isolated DNA molecule according to claim 13, wherein said linker is a protease-sensitive linker.

15 (Currently amended). An isolated DNA molecule according to claim 1, further comprising a DNA sequence encoding phosphatidylinositol-specific phospholipase C (PIPLC), wherein said DNA sequence is disposed ~~31~~ downstream of said heterologous DNA sequence and is operably linked to said ~~kidney-specific~~ uromodulin promoter, whereby said ~~kidney-specific~~ uromodulin promoter is capable of driving the expression of said DNA sequence encoding PIPLC.

16 (Original). An isolated DNA molecule according to claim 1, wherein any basolateral surface membrane targeting signals native to said heterologous polypeptide is inactivated or deleted.

Claims 17-24 (Cancelled)

25 (Currently amended). A transgenic non-human mammal all of whose germ cells and somatic cells contain a recombinant construct corresponding to the DNA molecule of claim 1, said DNA molecule having been introduced into said mammal is selected from the group consisting of goat, sheep, cow, pig and mouse and, or an ancestor of said mammal, at an embryonic stage, and wherein said mammal produces recoverable amounts of a recombinant biologically active polypeptide in its urine.

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Claims 26 and 27 (Cancelled)

28 (Currently amended). A transgenic non-human mammal according to claim 25, in which all germ cells and somatic cells further contains a recombinant construct comprising a ~~kidney-specific~~ uromodulin promoter operably linked to a DNA sequence encoding PIPLC, wherein said ~~kidney-specific~~ uromodulin promoter expresses PIPLC in the kidneys of said transgenic mammal.

29 (Currently amended). An isolated DNA molecule, comprising a ~~kidney-specific~~ uromodulin promoter operably linked to a heterologous DNA sequence encoding a heterologous polypeptide, wherein said ~~kidney-specific~~ uromodulin promoter directs expression of said heterologous polypeptide in vivo in the kidneys to produce a recombinant biologically active polypeptide in the urine.

Claim 30 (Cancelled)

31 (Currently amended). An isolated DNA according to claim ~~30~~ 29, wherein said uromodulin promoter is a goat uromodulin promoter.

32 (Original). An isolated DNA according to claim 31, wherein said goat uromodulin promoter has the nucleotide sequence of SEQ ID NO:37, or a fragment thereof capable of directing kidney-specific expression.

33 (Currently amended). An isolated DNA according to claim ~~30~~ 29, wherein said uromodulin promoter is the mouse uromodulin promoter.

34 (Original). An isolated DNA molecule according to claim 33, wherein said mouse uromodulin promoter has the nucleotide sequence

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of SEQ ID NO:1, or a fragment thereof capable of directing kidney-specific expression.

35(Original). An isolated DNA according to claim 29, further comprising a secretion signal sequence operably linked to said heterologous DNA sequence.

36(Original). An isolated DNA molecule according to claim 29, further comprising a self-replicable vector.

37(Original). A host cell transformed with the DNA molecule of claim 29.

38(Currently amended). A method for producing a recombinant biologically active polypeptide, comprising:

introducing the isolated DNA molecule of claim 29, into a fertilized embryo of a non-human mammal selected from the group consisting of goat, cow, sheep, pig, and mouse to generate a transgenic non-human mammal which expresses and secretes the heterologous polypeptide into the urine of the transgenic non-human mammal as a recombinant biologically active polypeptide;

collecting urine from the transgenic non-human mammal; and
recovering the secreted polypeptide to produce a recombinant biologically active polypeptide.

39(Original). A method according to claim 38, wherein said introducing step comprises injecting the isolated DNA molecule into a pronucleus of a fertilized embryo.

40(Original). A method according to claim 38, wherein the isolated DNA comprises a uromodulin promoter operably linked to a heterologous DNA sequence.

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41 (Currently amended). A method according to claim 40, wherein the uromodulin promoter is a mouse, goat, bovine, pig or rat uromodulin promoter.

42 (Original). A method according to claim 40, wherein the uromodulin promoter is a goat uromodulin promoter.

Claim 43 (Cancelled)

44 (Currently amended). A transgenic non-human mammal all of whose germ cells and somatic cells contain a recombinant construct corresponding to the DNA molecule of claim 29, said DNA molecule having been introduced into said mammal, or an ancestor of said mammal, at an embryonic stage, and wherein said mammal is selected from the group consisting of goat, sheep, cow, pig, and mouse and produces recoverable amounts of a recombinant biologically active polypeptide in its urine.

Claim 45 (Cancelled)

46 (Original). A transgenic non-human mammal according to claim 44, which is a transgenic goat.

47 (Previously presented). An isolated DNA molecule according to claim 1, wherein basolateral surface membrane targeting signals are inactivated or deleted.

48 (New). A method according to claim 40, wherein the uromodulin promoter is a mouse uromodulin promoter.

49 (New). A method according to claim 38, wherein said non-human mammal is a goat.

50 (New). A method according to claim 38, wherein said non-human mammal is a cow.

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51(New). A method according to claim 25, wherein said non-human mammal is a goat.

52(New). A method according to claim 25, wherein said non-human mammal is a cow.

53(New). A method according to claim 44, wherein said non-human mammal is a goat.

54(New). A method according to claim 44, wherein said non-human mammal is a cow.

55(New). A method according to claim 29, wherein said uromodulin promoter directs expression of said heterologous polypeptide in vivo in the thick ascending limb of Henle's loop and early distal tubules of the kidneys.